



SEQUENCE LISTING

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<120> APPARATUS AND METHOD FOR AUTOMATED PROTEIN DESIGN

<130> A-65353-8/RFT/RMS/RMK

<140> 09/837,886

<141> 2001-04-18

<150> 09/714,357

<151> 2000-11-15

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<150> 60/043,464

<151> 1997-04-11

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<160> 72

<170> PatentIn version 3.2

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1 5 10 15

Ser Arg Ser Asp Glu Leu Thr Arg His Ile Arg Ile His Thr Gly Gln
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Lys Pro Phe Gln Cys Arg Ile Cys Met Arg Asn Phe Ser Arg Ser Asp
35 40 45

His Leu Thr Thr His Ile Arg Thr His Thr Gly Glu Lys Pro Phe Ala
50 55 60

Cys Asp Ile Cys Gly Arg Lys Phe Ala Arg Ser Asp Glu Arg Lys Arg
65 70 75 80

His Thr Lys Ile His Leu Arg
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Lys Pro Tyr Thr Ala Arg Ile Lys Gly Arg Thr Phe Ser Asn Glu Lys
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Glu Leu Arg Asp Phe Leu Glu Thr Phe Thr Gly Arg
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Gln Gln Tyr Thr Ala Lys Ile Lys Gly Arg Thr Phe Arg Asn Glu Lys
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Glu Leu Arg Asp Phe Ile Glu Lys Phe Lys Gly Arg
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Glu Gln Tyr Thr Ala Lys Ile Lys Gly His Thr Phe Arg Asn Glu Lys
1 5 10 15

Glu Leu Arg Asp Phe Ile Glu Arg Phe Lys Gly Arg
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Glu Leu Arg Asp Phe Ile Glu Lys Phe Glu Gly Arg
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1 5 10 15

Glu Leu Arg Asp Phe Ile Glu Lys Phe Lys Gly Arg
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Gln Gln Tyr Thr Ala Lys Ile Lys Gly Arg Thr Phe Arg Asn Glu Lys
1 5 10 15

Glu Leu Arg Asp Phe Ile Glu Arg Phe Glu Gly Arg
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Glu Gln Tyr Thr Ala Lys Ile Lys Gly Lys Thr Phe Arg Asn Lys Arg
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Glu Leu Arg Asp Phe Ile Glu Lys Phe Lys Gly Arg
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Glu Leu Arg Asp Phe Ile Glu Lys Phe Lys Gly Arg
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1 5 10 15

Glu Leu Arg Asp Phe Ile Glu Lys Phe Lys Gly Arg
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Gln Arg Tyr Thr Ala Lys Ile Lys Gly Arg Thr Phe Arg Asn Glu Lys
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Glu Leu Arg Asp Phe Ile Glu Arg Phe Lys Gly Arg
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Gln Glu Tyr Thr Ala Lys Ile Lys Gly Arg Thr Phe Arg Asn Glu Lys
1 5 10 15

Glu Leu Arg Asp Phe Ile Glu Arg Phe Lys Gly Arg
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Gln Gln Tyr Thr Ala Lys Ile Lys Gly Arg Thr Phe Arg Asn Lys Arg
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Glu Leu Arg Asp Phe Ile Glu His Phe Lys Gly Arg
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Glu Leu Arg Asp Phe Ile Glu Lys Phe Thr Gly Arg
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Glu Leu Arg Asp Phe Ile Glu Lys Phe Lys Gly Arg
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Glu Leu Lys Lys Phe Ile Glu Lys Phe Lys Gly Arg
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Glu Leu Gln Asp Phe Ile Glu Lys Phe Lys Gly Arg
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Arg Leu Arg Asp Phe Ile Glu Lys Phe Lys Gly Arg
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Glu Leu Lys Arg Phe Ile Glu Lys Phe Lys Gly Arg
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Glu Leu Lys Lys Phe Ile Glu Lys Phe Lys Gly Arg
20 25

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Arg Met Lys Gln Leu Glu Asp Lys Val Glu Glu Leu Leu Ser Lys Asn
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Tyr His Leu Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Val Gly Glu
20 25 30

Arg

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Tyr	His	Leu	Glu	Asn	Glu	Val	Ala	Arg	Leu	Lys	Lys	Leu	Ala	Gly	Glu
		20						25					30		

Arg

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Arg	Met	Lys	Gln	Leu	Glu	Asp	Lys	Val	Glu	Glu	Leu	Leu	Ser	Lys	Asn
1			5						10					15	

Tyr	His	Leu	Glu	Asn	Glu	Met	Ala	Arg	Leu	Lys	Lys	Leu	Val	Gly	Glu
		20						25					30		

Arg

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Arg Leu Lys Gln Met Glu Asp Lys Val Glu Glu Leu Leu Ser Lys Asn
1 5 10 15

Tyr His Leu Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Val Gly Glu
20 25 30

Arg

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1 5 10 15

Tyr His Leu Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Ala Gly Glu
20 25 30

Arg

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Tyr His Leu Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Val Gly Glu
20 25 30

Arg

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1 5 10 15

Tyr His Leu Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Val Gly Glu
20 25 30

Arg

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Arg Met Lys Gln Leu Glu Asp Lys Val Glu Glu Leu Leu Ser Lys Asn
1 5 10 15

Tyr His Ala Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Val Gly Glu
20 25 30

Arg

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Lys Gln Asp Glu Glu Ser Tyr His Asn Ala Arg Lys
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Glu Lys Asp Arg Glu Arg Arg Arg Glu Arg Arg Glu
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Glu Lys Gln Lys Glu Arg Glu Arg Glu Glu Arg Gln
1 5 10

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Ala Arg Ala Ala Ala Ala Arg Arg Arg Ala Arg Ala
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Arg Glu Glu Arg Arg Arg Glu Asp Arg Lys Arg Glu
1 5 10

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Asn Thr Arg Ala Lys Ser Ala Asn His Asn Thr Gln
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Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala
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Met Thr Tyr Lys Leu Ile Leu Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
50 55

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Met Thr Trp Lys Tyr Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ile Val Asp Ala Ala Thr Phe Glu Lys Val Trp Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Phe Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Leu Thr Ile Thr Glu
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Met Thr Phe Lys Ile Ile Phe Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ile Val Asp Ala Ala Thr Val Glu Lys Val Trp Lys Gln
20 25 30

Tyr Val Asn Asp Asn Gly Leu Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Ile Thr Glu
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Met Thr Phe Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ile Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Ile Thr Glu
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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
50 55

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Met Thr Phe Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln

20 25 30

Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
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1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
50 55

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Met Thr Phe Lys Leu Ile Ala Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
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Met Thr Ala Lys Ala Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Ile Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Ile Thr Ile Thr Glu
50 55

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Met Thr Ala Lys Leu Ile Ala Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Ala Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Ile Thr Ile Thr Glu
50 55

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1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Ala Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Leu Thr Val Thr Glu
50 55

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Met Thr Tyr Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
50 55

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1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Phe Thr Glu
50 55

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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Phe Thr Glu
50 55

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Met Thr Phe Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
50 55

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1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Val Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Tyr Thr Phe Thr Glu
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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
50 55

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Met Thr Phe Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala

35

40

45

Thr Lys Thr Trp Thr Val Thr Glu
50 55

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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
50 55

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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Val Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
50 55

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Met Thr Phe Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
 1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Tyr Lys Gln
 20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
 35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
 50 55

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Met Thr Tyr Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
 1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
 20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
 35 40 45

Thr Lys Thr Tyr Thr Phe Thr Glu
 50 55

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Met Thr Tyr Lys Leu Ile Val Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Phe Thr Glu
50 55

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Met Thr Phe Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Ile Thr Glu
50 55

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Met Thr Phe Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ile Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
50 55

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Met Thr Phe Lys Ile Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
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Met Thr Tyr Lys Leu Ile Ile Asn Gly Lys Thr Leu Lys Gly Glu Thr
1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Ile Thr Glu
50 55

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1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ile Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
50 55

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Met Thr Tyr Lys Ile Ile Phe Asn Gly Lys Thr Leu Lys Gly Glu Thr
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Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
20 25 30

Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
 35 40 45

Thr Lys Thr Phe Thr Val Thr Glu
 50 55

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 1 5 10 15

Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys Gln
 20 25 30

Tyr Leu Asn Asp Asn Gly Ile Asp Gly Glu Ile Thr Tyr Asp Asp Ala
 35 40 45

Thr Lys Thr Phe Thr Phe Thr Glu
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Tyr Ala Asn Asp Asn Gly Ile Asp Gly Glu Trp Thr Tyr Asp Asp Ala
35 40 45

Thr Lys Thr Trp Thr Ile Thr Glu
50 55